

STX275 through STX450 Tractor

Service Manual No.6-13290

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Section 1000

STANDARD TORQUE SPECIFICATIONS

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
450 Sherman Avenue
Hamilton, ON L8N 4C4 CANADA

Rac 7-68611

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Printed in U.S.A.
May, 1997 (Revised February, 1999)


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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphites, Molydisulfide greases, or other extreme pressure lubricants are used.


| Grade 5 Bolts, Nuts, and Studs | | |
|---|--------------|---------------|
|  | | |
| Size | Pound-Inches | Newton metres |
| 1/4 inch | 108 to 132 | 12 to 15 |
| 5/16 inch | 204 to 252 | 23 to 28 |
| 3/8 inch | 420 to 504 | 48 to 57 |
| | | |
| Size | Pound-Feet | Newton metres |
| 7/16 inch | 54 to 64 | 73 to 87 |
| 1/2 inch | 80 to 96 | 109 to 130 |
| 9/16 inch | 110 to 132 | 149 to 179 |
| 5/8 inch | 150 to 180 | 203 to 244 |
| 3/4 inch | 270 to 324 | 366 to 439 |
| 7/8 inch | 400 to 480 | 542 to 651 |
| 1.0 inch | 580 to 696 | 787 to 944 |
| 1-1/8 inch | 800 to 880 | 1085 to 1193 |
| 1-1/4 inch | 1120 to 1240 | 1519 to 1681 |
| 1-3/8 inch | 1460 to 1680 | 1980 to 2278 |
| 1-1/2 inch | 1940 to 2200 | 2631 to 2983 |


| Grade 8 Bolts, Nuts, and Studs | | |
|--|--------------|---------------|
|  | | |
| Size | Pound-Inches | Newton metres |
| 1/4 inch | 144 to 180 | 16 to 20 |
| 5/16 inch | 288 to 348 | 33 to 39 |
| 3/8 inch | 540 to 648 | 61 to 73 |
| | | |
| Size | Pound-Feet | Newton metres |
| 7/16 inch | 70 to 84 | 95 to 114 |
| 1/2 inch | 110 to 132 | 149 to 179 |
| 9/16 inch | 160 to 192 | 217 to 260 |
| 5/8 inch | 220 to 264 | 298 to 358 |
| 3/4 inch | 380 to 456 | 515 to 618 |
| 7/8 inch | 600 to 720 | 814 to 976 |
| 1.0 inch | 900 to 1080 | 1220 to 1465 |
| 1-1/8 inch | 1280 to 1440 | 1736 to 1953 |
| 1-1/4 inch | 1820 to 2000 | 2468 to 2712 |
| 1-3/8 inch | 2380 to 2720 | 3227 to 3688 |
| 1-1/2 inch | 3160 to 3560 | 4285 to 4827 |
| NOTE: Use thick nuts with Grade 8 bolts. | | |

TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques when specifications are not given.

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used.

| Grade 8.8 Bolts, Nuts, and Studs | | |
|---|--------------|---------------|
|  | | |
| Size | Pound-Inches | Newton metres |
| M4 | 24 to 36 | 3 to 4 |
| M5 | 60 to 72 | 7 to 8 |
| M6 | 96 to 108 | 11 to 12 |
| M8 | 228 to 276 | 26 to 31 |
| M10 | 456 to 540 | 52 to 61 |
| | | |
| Size | Pound-Feet | Newton metres |
| M12 | 66 to 79 | 90 to 107 |
| M14 | 106 to 127 | 144 to 172 |
| M16 | 160 to 200 | 217 to 271 |
| M20 | 320 to 380 | 434 to 515 |
| M24 | 500 to 600 | 675 to 815 |
| M30 | 920 to 1100 | 1250 to 1500 |
| M36 | 1600 to 1950 | 2175 to 2600 |

| Grade 10.9 Bolts, Nuts, and Studs | | |
|---|--------------|---------------|
|  | | |
| Size | Pound-Inches | Newton metres |
| M4 | 36 to 48 | 4 to 5 |
| M5 | 84 to 96 | 9 to 11 |
| M6 | 132 to 156 | 15 to 18 |
| M8 | 324 to 384 | 37 to 43 |
| | | |
| Size | Pound-Feet | Newton metres |
| M10 | 54 to 64 | 73 to 87 |
| M12 | 93 to 112 | 125 to 150 |
| M14 | 149 to 179 | 200 to 245 |
| M16 | 230 to 280 | 310 to 380 |
| M20 | 450 to 540 | 610 to 730 |
| M24 | 780 to 940 | 1050 to 1275 |
| M30 | 1470 to 1770 | 2000 to 2400 |
| M36 | 2580 to 3090 | 3500 to 4200 |

Grade 12.9 Bolts, Nuts, and Studs



Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

| Tube OD Hose ID | Thread Size | Pound- Inches | Newton metres |
|--------------------------------|----------------|------------------|------------------|
| 37 Degree Flare Fitting | | | |
| 1/4 inch 6.4 mm | 7/16-20 | 72 to 144 | 8 to 16 |
| 5/16 inch 7.9 mm | 1/2-20 | 96 to 192 | 11 to 22 |
| 3/8 inch 9.5 mm | 9/16-18 | 120 to 300 | 14 to 34 |
| 1/2 inch 12.7 mm | 3/4-16 | 180 to 504 | 20 to 57 |
| 5/8 inch 15.9 mm | 7/8-14 | 300 to 696 | 34 to 79 |
| | | | |
| Tube OD Hose ID | Thread Size | Pound- Feet | Newton metres |
| 3/4 inch 19.0 mm | 1-1/16-12 | 40 to 80 | 54 to 108 |
| 7/8 inch 22.2 mm | 1-3/16-12 | 60 to 100 | 81 to 135 |
| 1.0 inch 25.4 mm | 1-5/16-12 | 75 to 117 | 102 to 158 |
| 1-1/4 inch 31.8 mm | 1-5/8-12 | 125 to 165 | 169 to 223 |
| 1-1/2 inch 38.1 mm | 1-7/8-12 | 210 to 250 | 285 to 338 |

| Tube OD Hose ID | Thread Size | Pound- Inches | Newton metres |
|-------------------------------------|----------------|------------------|------------------|
| Straight Threads with O-ring | | | |
| 1/4 inch 6.4 mm | 7/16-20 | 144 to 228 | 16 to 26 |
| 5/16 inch 7.9 mm | 1/2-20 | 192 to 300 | 22 to 34 |
| 3/8 inch 9.5 mm | 9/16-18 | 300 to 480 | 34 to 54 |
| 1/2 inch 12.7 mm | 3/4-16 | 540 to 804 | 57 to 91 |
| | | | |
| Tube OD Hose ID | Thread Size | Pound- Feet | Newton metres |
| 5/8 inch 15.9 mm | 7/8-14 | 58 to 92 | 79 to 124 |
| 3/4 inch 19.0 mm | 1-1/16-12 | 80 to 128 | 108 to 174 |
| 7/8 inch 22.2 mm | 1-3/16-12 | 100 to 160 | 136 to 216 |
| 1.0 inch 25.4 mm | 1-5/16-12 | 117 to 187 | 159 to 253 |
| 1-1/4 inch 31.8 mm | 1-5/8-12 | 165 to 264 | 224 to 357 |
| 1-1/2 inch 38.1 mm | 1-7/8-12 | 250 to 400 | 339 to 542 |

| Split Flange Mounting Bolts | | |
|------------------------------------|------------------|------------------|
| Size | Pound- Inches | Newton metres |
| 5/16-18 | 180 to 240 | 20 to 27 |
| 3/8-16 | 240 to 300 | 27 to 34 |
| 7/16-14 | 420 to 540 | 47 to 61 |
| | | |
| Size | Pound- Feet | Newton metres |
| 1/2-13 | 55 to 65 | 74 to 88 |
| 5/8-11 | 140 to 150 | 190 to 203 |

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

| Nom. SAE Dash Size | Tube OD | Thread Size | Pound- Inches | Newton metres | Thread Size | Pound- Inches | Newton metres |
|-----------------------------|-----------------------|----------------|------------------|------------------|--|------------------|------------------|
| O-ring Face Seal End | | | | | O-ring Boss End Fitting or Lock Nut | | |
| -4 | 1/4 inch 6.4 mm | 9/16-18 | 120 to 144 | 14 to 16 | 7/16-20 | 204 to 240 | 23 to 27 |
| -6 | 3/8 inch 9.5 mm | 11/16-16 | 216 to 240 | 24 to 27 | 9/16-18 | 300 to 360 | 34 to 41 |
| -8 | 1/2 inch 12.7 mm | 13/16-16 | 384 to 480 | 43 to 54 | 3/4-16 | 540 to 600 | 61 to 68 |
| | | | | | | | |
| | | | | | Thread Size | Pound- Feet | Newton metres |
| -10 | 5/8 inch 15.9 mm | 1-14 | 552 to 672 | 62 to 76 | 7/8-14 | 60 to 65 | 81 to 88 |
| | | | | | | | |
| Nom. SAE Dash Size | Tube OD | Thread Size | Pound- Feet | Newton metres | 1-1/16-12 | 85 to 90 | 115 to 122 |
| | | | | | 1-3/16-12 | 95 to 100 | 129 to 136 |
| -12 | 3/4 inch 19.0 mm | 1-3/16-12 | 65 to 80 | 90 to 110 | 1-5/16-12 | 115 to 125 | 156 to 169 |
| -14 | 7/8 inch 22.2 mm | 1-3/16-12 | 65 to 80 | 90 to 110 | 1-5/8-12 | 150 to 160 | 203 to 217 |
| -16 | 1.0 inch 25.4 mm | 1-7/16-12 | 92 to 105 | 125 to 140 | 1-7/8-12 | 190 to 200 | 258 to 271 |
| -20 | 1-1/4 inch 31.8 mm | 1-11/16-12 | 125 to 140 | 170 to 190 | | | |
| -24 | 1-1/2 inch 38.1 mm | 2-12 | 150 to 180 | 200 to 254 | | | |

NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

Section 1001

SAFETY

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Rac 7-90470

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Printed in U.S.A.
February, 1999

SAFETY



WARNING: THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.**

M171B

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the "Do Not Operate" tag shown below on the key for the key switch when keys are removed for servicing or repairing the machine. Tags are available from your service parts supplier.

Before servicing a machine, park the machine on hard level ground. Turn off the engine, apply the parking brake and remove the key from the key switch. Put blocks in front of and behind either the front or rear wheels.

| | |
|--|--|
|  <p>DO NOT OPERATE</p> <p>Reason _____</p> <p>_____</p> <p>_____</p> <p>Signed by _____</p> |  <p>DO NOT REMOVE THIS TAB!</p> <p>See Other Side</p> <p>Case Part No. _____</p> <p>Printed in U.S.A.</p> |
|--|--|

MS99B001



WARNING: Read the operators manual to familiarize yourself with the correct control functions.

M489



WARNING: Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.

M490



WARNING: This is one man machine, no riders allowed.

M491



WARNING: Before starting engine study Operators Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating. It is your responsibility to understand and follow manufacturers instructions on machine operation, service, and to observe pertinent laws and regulations. Operator and Service Manuals may be obtained from your equipment dealer.

M103A



WARNING: If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.

M492



WARNING: When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.

M493



WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.

M494



WARNING: When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.

M495



WARNING: Always wear heat protective gloves to prevent burning your hands when handling heated parts.

SM121A



WARNING: Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.

M496



WARNING: Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To Prevent Personal Injury: Relieve all pressure, before disconnecting fluid lines. Before applying pressure, make sure all connections are tight and components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

SM171A



WARNING: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.

M497



WARNING: When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).

M498



WARNING: Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands

M499



WARNING: When servicing or repairing the machine. Keep the shop floor and operators compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and or shop cloths as required. Use safe practices at all times.

M500



WARNING: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in the Service Manual.

M501



WARNING: Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the door and get outside air into the area.

M502



WARNING: When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.

M503



WARNING: Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operators Manual. Failure to follow these instructions can cause serious injury or death.

M504

ROLL OVER PROTECTIVE STRUCTURE (ROPS)

ROPS, the operators seat, the seat belts and all mounting, accessories and wiring inside the operators protective system must be carefully checked after a tractor accident and all parts with damage must be replaced immediately. DO NOT TRY TO MAKE REPAIRS OR WELD THE ROPS.

Safety Rules:

1. Do not make modifications to the ROPS. Example, welding an accessory to the ROPS or drilling a hole in the ROPS.
2. Special fasteners are used to install the operator protective parts. Replacement parts must be the same as given in the Parts Catalog.

Section 2001

ENGINE REMOVAL AND INSTALLATION STX 275 and STX 325 Tractors

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Burlington, ON L7N 3M6 CANADA

Rac 7-92900

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September, 1999

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